Claims:

1. (Cancelled)

2. (Previously presented) A process for forming tire band elements_having improved durability, the process comprising the steps of:

providing a tire band element matrix;

encapsulating a reactant to form microcapsules, where the reactant is capable of undergoing polymerization within the matrix;

selecting a reaction facilitator capable of facilitating the polymerization of the reactant; and

adding the microcapsules and the reaction facilitator to the tire band element matrix.

3. (Previously presented) A banded tire having a band element, the band element comprising: (1) a band element matrix susceptible to cracking; (2) a microencapsulated reactant capable of polymerizing within the matrix and adhering to the cracks; and (3) a reaction facilitator capable of facilitating the polymerization reaction of the microencapsulated reactant.

4. (Previously presented) The method of claim 2, where said step of adding the microcapsules and the reaction facilitator to the band element matrix includes embedding the reaction facilitator throughout the band element matrix and dispersing the microcapsules within the band element matrix.

5. (Previously presented) The method of claim 2, where the reactant comprises a diene monomer, a vinyl-substituted aromatic monomer, or an epoxide monomer.

6. (Previously presented) The method of claim 2, where the band element comprises steel, aluminum, thermoplastic resin, thermosetting resin, or multi-layered composites.

7. (Previously presented) The method of claim 2, where the band element matrix comprises a composite of resin binder and fibers.

8. (Previously presented) The method of claim 7, where the microcapsules and reaction facilitator are incorporated into the resin binder during preparation of the band element.

9. (Previously presented) The method of claim 2, where the band element is prepared by a method comprising homogeneous filament winding, non-homogeneous filament winding, multilayer tape composite winding, winding with prepreg materials, winding with wet woven materials, winding with mats, winding with resin transfer molding processes, winding with wet or prepreg woven performs, or combinations thereof.

10. (Previously presented) The banded tire of claim 3, where the band element comprises steel, aluminum, thermoplastic resin, thermosetting resin, or multi-layered composites.

11. (Previously presented) The banded tire of claim 3, where the microencapsulated reactant comprises a conjugated diene monomer or a combination of conjugated diene monomer and vinyl-substituted aromatic monomer.

12. (Withdrawn) The banded tire of claim 3, where the microencapsulated reactant comprises a cyclic monomer selected from dicyclopentadiene, cyclic ethers containing the tetrahydrofuran moiety, phenyl glycidyl ether, cresyl glycidyl ether, glycidyl ethers of alcohols, epoxides of polyunsaturated organic compounds, oligomers of epihalohydrins, glycidyl derivatives of hydantoin, glycidyl ethers of polyvalent alcohols, glycidyl derivatives of triazines, and glycidyl ethers of polyhydric phenols, cycloaliphatic epoxy resins, and epoxy novolac resins.

13. (Withdrawn) The banded tire of claim 3, where the microencapsulated reactant comprises dicyclopentadiene.

14. (Previously presented) The banded tire of claim 3, where the reaction facilitator is embedded throughout the band element matrix.

15. (Previously presented) The banded tire of claim 3, where the reaction facilitator comprises a polymerization catalyst or initiator.

16. (Withdrawn) The banded tire of claim 3, where the reaction facilitator comprises a lanthanide-based coordination catalyst system.

17. (Previously presented) The banded tire of claim 3, where the reaction facilitator comprises an anionic polymerization initiator.

18. (Withdrawn) The banded tire of claim 3, where the reaction facilitator comprises a ring-opening metathesis catalyst system.

19. (Previously presented) The banded tire of claim 3, where the microencapsulated reactant is encapsulated with a shell that is strong enough to withstand the rigors of processing and normal tire use, but is ruptured by a crack in the band element matrix.

20. (Previously presented) The banded tire of claim 3, where the microencapsulated reactant is encapsulated with two or more different types of shells, and where each type of shell is characterized by a different strength and ease of rupture.

21. (Previously presented) The banded tire of claim 3, where the microencapsulated reactant is encapsulated by the *in situ* polymerization of urea and formaldehyde.

22. (Previously presented) The banded tire of claim 3, where the band element further comprises a viscoelastic coating.

23. (Previously presented) The banded tire of claim 22, where the coating comprises (1) a microencapsulated reactant and (2) a reaction facilitator.